Product Name of PDC Bits

8-1/2	TES	5	16	1	BG

Example:

8-1/2″TES5161BG：8.5 inches（215.9mm）, steel body, 5 blades, main cutter size Φ15.875mm, the first version, back row cutter, gauge strengthen.

Bit OD	Bit Type	Blade Qty.	PDC Main Cutter	Additional Features
3-1/4" ~ 26"	TES: Steel Body PDC Bit TEM: Matrix Body PDC Bit	3-8	19-Φ19.05mm	B: Back row Cutter
			16-Φ15.875mm	A: Absorbing Tooth
			13-Φ13.44mm	G: Gauge Strengthen
			10-Φ10.00mm	Y: Sharp Cutter
			8-Φ8.00mm	S: Spiral Blade

Product Name of Hybrid Bits

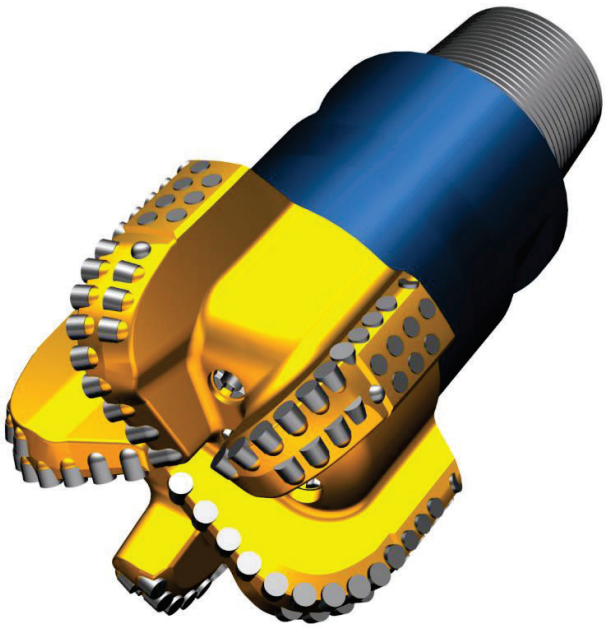
8-1/2	TEH	2	4	16	BG

Example:

8-1/2″TEH2416BG：8.5 inches（215.9mm）, hybrid drill bit, 2 cones, 4 blades, main cutter size Φ15.875mm, back row cutter, gauge strengthen.

Bit OD	Bit Type	Cone Qty.	Blade Qty.	PDC Main Cutter
5-7/8" ~ 26"	TEH: PDC-Cone Hybrid Bit TEHD: Directional Hybrid Bit	2-4	3-8	19-Φ19.05mm
				16-Φ15.875mm
				13-Φ13.44mm

Steel Body PDC Bits



Introduction

High performance PDC, optimized cutting structure and hydraulic layout are adopted to provide efficient and customized steel PDC drill bit solution.

Features

- New type super hard material diamond composite is equipped, which make every PDC drill bit more abrasion and impact resistance;
- The structure and parameters of the bit are built on the basis of experimental research, and optimized by computer;
- The quality of the product is stable with highly efficiency and long service life;
- Offer preference to raw material for high-cost performance and comprehensive benefit;
- Applicable to soft-medium hard formation;
- Ordinary, reinforced and high strength type drill bits can be adjusted according to the rock properties and customer requirement.

Size Range

3-1/4"~26"

Steel Body PDC Bits Selection Guide				
No.	Formation	IADC	Lithology	Appropriate PDC Bit Type
1	Extremely Soft	S123	Clay, Mudstone, Marlite	TES416、TES419、TES519
2	Soft	S222 S223	Marlite, Mudstone, Shale	TES416、TES519、TES516
3	Medium	S322 S323	Shale, Limestone, Sandstone	TES516、TES513、TES616、TES613
4	Medium Hard	S423 S433	Sandstone, Gravel, Dolomite, Anhydrite	TES616、TES613、TES716、TES713

Matrix Body PDC Bits

Introduction

Advanced matrix formula, optimize tooth arrangement and cutter material are adopted to provide efficient and customized matrix PDC drill bit solution.

Features

- The optimized type and the customized design are optimized to meet the needs of the extremely soft to the medium hard formations;
- The configuration of the cutters is optimized by rational selection of wear resistance and impact resistance PDC providing the best material optimizing solution;
- Providing high efficiency, low torque and smooth cutting matrix PDC bits by automatic distribution cutters achieved by independent development software which can analyze the characteristics of formation lithology, PDC cutters failure and cutting structure at the same time;
- Improved by advanced matrix formula, the bending strength of matrix bit is much higher than that of ordinary matrix material to ensure the safety of drilling at the bottom of the well;
- Professional CFD analysis system enables optimal nozzle position and nozzle combination.

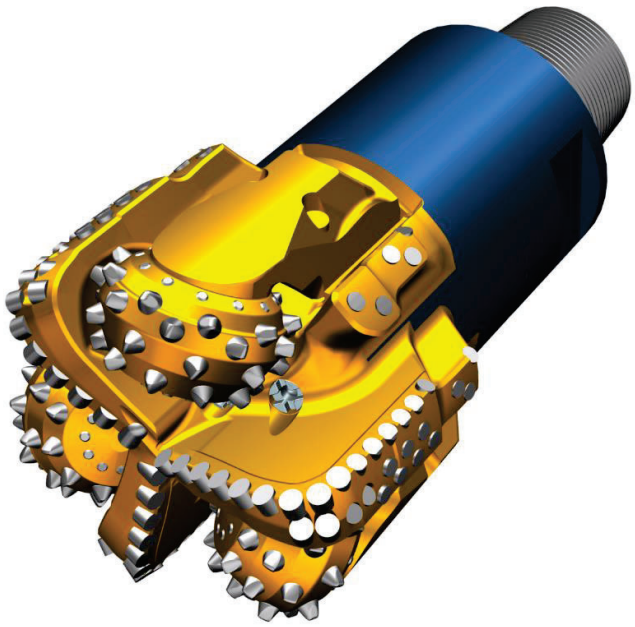
Size range

3-1/4"~17-1/2"

Matrix Body PDC Bits Selection Guide

No.	Formation	IADC	Lithology	Appropriate PDC Bit Type
1	Extremely Soft	S123	Clay, Mudstone, Marlite	TEM416、TEM419、TEM519
2	Soft	S222 S223	Marlite, Mudstone, Shale	TEM416、TEM519、TEM516
3	Medium	S322 S323	Shale, Limestone, Sandstone	TEM516、TEM513、TEM616、TEM613
4	Medium Hard	S423 S433	Sandstone, Gravel, Dolomite, Anhydrite	TEM616、TEM613、TEM716、TEM713

Hybrid Drill Bits



Introduction

The hybrid bit is made up of fixed PDC cutting structure and cone cutting structure. The cutters on the cone break the rock by impact crushing forming broken pits at the bottom of the well, which makes the bottom hole uneven while weakening the strength of the bottom hole rock. It helps the PDC cutters scraping and cutting rock more easily.

A series of customized hybrid drill bits have been developed for challenging formation which has strong stratum adaptability. The hybrid drill bits have high rock breaking efficiency and fast penetration rate in hard formations, abrasive formations, compact shale and heterogeneous formations, such as gravel beds.

Features

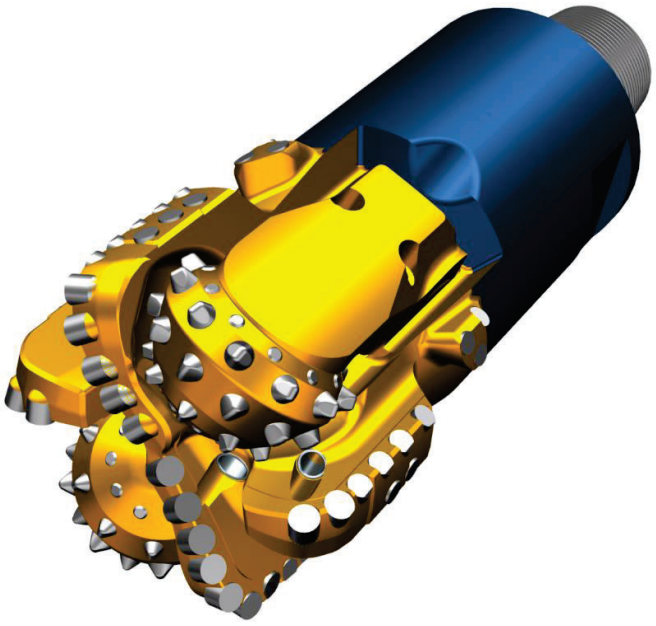
- The good collocation of the PDC structure with the cone make the bit strong adaptability in the hard formation and high rock breaking efficiency.
- By optimizing of the force balance of the PDC cutting structure the bit service life can be improved greatly considering the bit stability and the formation adaptability.
- The optimized computational fluid dynamics (CFD) of the bit hydraulic structure and nozzle can improve the distribution of flow field and cleaning and cooling effect.

Size Range

5-7/8"~26"

Typical Model			
No.	Size	Type	Applied Formation
1	5-7/8"、6"、8-3/8″、8-1/2″、8-3/4″、9-1/2″	TEH2416 TEH2413	Hard formation, abrasive formation, heterogeneous formations (such as gravel formation), soft hard interlacing and other complex formation
2	12-1/4″、13-1/8″、13-3/8″、16″、17-1/2″	TEH3316 TEH3319	Hard formation, abrasive formation, multiple layers of soft and hard frequent transformation formation and giant boulder formation
3	22″、26″	TEH4416 TEH4419	Hard formation、complex interlaced formation; Small torque and low torsional vibration drilling

Directional Hybrid Drill Bits



Introduction

The hybrid bit is made up of fixed PDC cutting structure and cone cutting structure. The cutters on the cone break the rock by impact crushing forming broken pits at the bottom of the well, which makes the bottom hole uneven while weakening the strength of the bottom hole rock. It helps the PDC cutters scraping and cutting rock more easily.

A series of customized directional hybrid bits are developed for directional and horizontal wells. The product has the features of small torque, low torsional vibration, less stick slip, high slope rate, stable slope effect, strong steering drilling ability.

Features

- The good collocation of the PDC structure with the cone make the bit low twist, good controllability of tool surface, superior guide performance.
- Multipoint centralizers are designed to enhance the bit working stability and improve the guiding performance which can prolong the bit service life greatly.
- The lengthening and decentralizing upending design enhance the bit stability and drilling ability in horizontal well.
- Multi echelon righting structure enable that the bit can work in different conditions like buildup and hold, horizontal drilling which can make the bit strong adaptability in guide drilling.

Size range

5-7/8"~17-1/2"

Typical Model			
No.	Size	Type	Applied Formation
1	5-7/8"、6"、8-3/8″、8-1/2″、8-3/4″、9-1/2″	TEH2416 TEH2413	Directional drilling in soft-hard formations, large displacement wells, horizontal wells, shale gas horizontal wells, abrasive formations, heterogeneous formations (such as gravel beds), interbeds, multi-layer soft and hard transformation formations
2	12-1/4″、13-1/8″、13-3/8″、16″、17-1/2″	TEH3316 TEH3319	

Coal Mine PDC Bits

Introduction

Coal mine PDC drill bit are special bits for geological exploration, coal mine gas drainage, water discharge in directional drilling with the characteristics of long life, high efficiency, and good drilling capability which can improve the efficiency of coal mine, gas control, water prevention and provides technical support for safety mining.

At present, the main PDC bits used in mining have three types: flat type, three wings parabolic type, four wings type. Based on the features of the current coal mine PDC bit, Company design new features to improve drilling efficiency overcoming coal mine drilling difficulties such as hole-making and debris discharging.

Features

- Different cutters arrangement solutions are available which can offer high-cost performance and good comprehensive benefit.
- The optimization of direction structure design and computer simulation can make good guidance performance.
- Oil bit manufacturing process ensure stable product quality and excellent high drilling efficiency, long service life, and strong gauge.
- Lithology applicable: Drillable in the rock f≤18.

Applicable formations

The rock formation in the coal mine are mostly soft to medium hard, and the drill ability is generally in the range of grade IV to VI, and the abrasiveness of the rock is soft to medium.

Size range

Φ96mm~Φ145mm

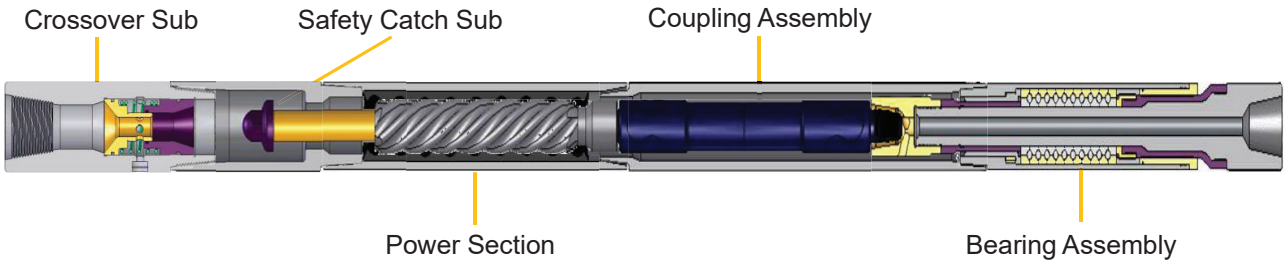
Rock Drill bit

Bit Size		Bit Type（IADC）
inch	mm	
4-1/8	104.7	517、527
4-1/4	107.9	527
4-3/8	111.1	571
4-1/2	114.3	127、517、537、637
4-5/8	117.4	127、217、437、517、527、537、617、637
4-3/4	120.6	517
5-1/8	130.1	517
5-1/2	139.7	537
5-2/3	143.9	517
5-7/8	149.2	136、217、517、537、617、637
6	152.4	117、127、437、517、537、617、637
6-1/8	155.5	517
6-1/2	165.1	127、136、217、437、517、537、617、637
6-5/8	168.2	517
6-3/4	171.4	517
7-1/2	190.5	127、517、537
7-7/8	200	117
8-1/4	209.5	517
8-3/8	212.7	537
8-1/2	215.9	117、127、437、447、517、537、547、617、637
8-3/4	222.2	127、437、447、517、537、
9-1/2	241.3	127、447、517、537、547、617、637
9-5/8	244.4	127
9-7/8	250.8	127、517、537
10-5/8	269.8	127、537、617
12-1/4	311.1	115、127、437、517、537、547、617、637、737
12-5/8	320.6	127、517、617
13-1/8	333.3	127、517、537、547、617
13-5/8	346	127、517、537
14-3/4	374.6	115、515、517
15-1/2	393.7	125
16	406.4	115、415、515、517、537
17-1/2	444.5	115、124、125、437、517、525、535、537
20	508	125
22	558.8	515
24	609.6	125、515、525
26	660.4	115、121、125、515、

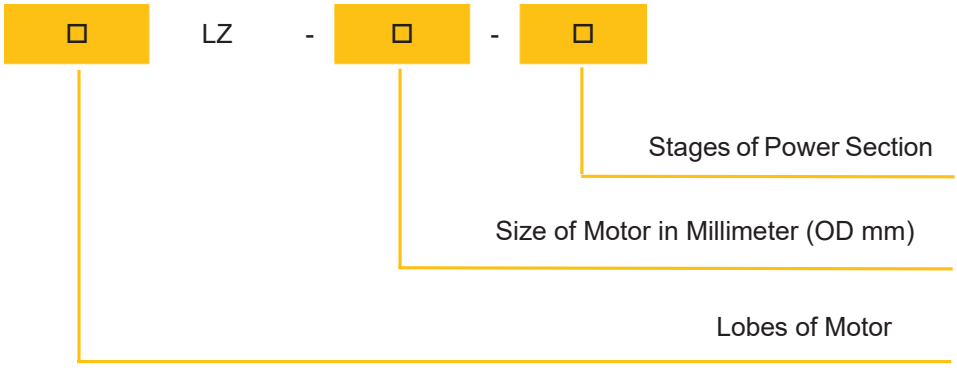
DOWNHOLE MOTOR

Introduction

Downhole motor is a kind of downhole dynamic drilling tool upon the power of drilling mud, which is composed of four assemblies of by-pass valve, motor cardan shaft and drive shaft. Mud stream from the outlet of mud pump flows through a by-pass valve into the motor. This stream produces pressure loss at both inlet and outlet of the pump, to push the rotor into rotating, and to transmit the torque and speed on the bit to enable drilling operations.



Model of Downhole Motor



Model Size mm	Model Number	Lobes	Stages	Flow Rate Range gpm (lpm)	Speed Range rpm	Rotation rev/gal (rev/liter)	Operation Torque ft-lb (Nm)	Operation Pressure Diff psi (kPa)	Max Torque ft-lb (Nm)	Max Pressure Diff psi (kPa)	Max Power HP (kW)
95	5LZ-95-6.6	5:6	6.6	79-161 (300-610)	123-251	1.56 (0.411)	1811 (2455)	1483 (10227)	2717 (3683)	2225 (15341)	87 (65)
	7LZ-95-4.3	7:8	4.3	79-161 (300-610)	104-211	1.31 (0.346)	1399 (1897)	966 (6663)	2099 (2846)	1450 (9995)	56 (42)
120	5LZ-120-5.2	5:6	5.2	100-251 (380-950)	81-202	0.81 (0.213)	2750 (3728)	1169 (8058)	4125 (5592)	1753 (12087)	106 (79)
	7LZ-120-6.3	7:8	6.3	151-349 (570-1320)	91-210	0.6 (0.159)	4471 (6061)	1416 (9762)	6706 (9092)	2124 (14643)	178 (133)

DOWNHOLE MOTOR

Model Size mm	Model Number	Lobes	Stages	Flow Rate Range gpm (lpm)	Speed Range rpm	Rotation rev/gal (rev/liter)	Operation Torque ft-lb (Nm)	Operation Pressure Diff psi (kPa)	Max Torque ft-lb (Nm)	Max Pressure Diff psi (kPa)	Max Power HP (kW)
127	7LZ-127-2.7	7:8	2.7	151-349 (570-1320)	64-149	0.43 (0.113)	2683 (3637)	607 (4184)	4024 (5456)	910 (6276)	76 (57)
	7LZ-127-2.8	7:8	2.8	151-349 (570-1320)	56-131	0.37 (0.099)	3190 (4325)	629 (4338)	4786 (6488)	944 (6507)	79 (59)
	7LZ-127-3.3	7:8	3.3	151-349 (570-1320)	64-149	0.43 (0.113)	3279 (4445)	742 (5114)	4918 (6668)	1113 (7671)	93 (69)
	7LZ-127-3.5	7:8	3.5	151-349 (570-1320)	56-131	0.37 (0.099)	3987 (5406)	787 (5424)	5981 (8109)	1180 (8136)	99 (74)
135	5LZ-135-4.5	5:6	4.5	211-423 (800-1600)	123-246	0.58 (0.154)	3299 (4472)	1012 (6974)	4948 (6708)	1517 (10461)	154 (115)
165	5LZ-165-5.1	5:6	5.1	301-600 (1140-2270)	132-263	0.44 (0.116)	4949 (6709)	1146 (7902)	7423 (10064)	1719 (11853)	248 (185)
	7LZ-165-4.7	7:8	4.7	301-600 (1140-2270)	73-145	0.24 (0.064)	8233 (11162)	1056 (7283)	12350 (16743)	1585 (10925)	227 (169)
	7LZ-165-5.6	7:8	5.6	301-600 (1140-2270)	88-175	0.29 (0.077)	8175 (11083)	1259 (8678)	12263 (16625)	1888 (13017)	272 (203)
	7LZ-165-5.6	7:8	5.6	301-600 (1140-2270)	95-188	0.31 (0.083)	7580 (10277)	1259 (8678)	11371 (15416)	1888 (13017)	271 (202)
172	5LZ-172-6.2	5:6	6.2	301-600 (1140-2270)	112-222	0.37 (0.098)	7157 (9703)	1394 (9608)	10736 (14555)	2090 (14412)	303 (226)
	5LZ-172-7.1	5:6	7.1	301-600 (1140-2270)	112-222	0.37 (0.098)	8196 (11112)	1596 (11001)	12294 (16668)	2393 (16502)	346 (258)
	7LZ-172-5.1	7:8	5.1	301-600 (1140-2270)	71-141	0.23 (0.062)	9260 (12554)	1146 (7902)	13890 (18831)	1719 (11853)	248 (185)
	7LZ-172-5.5	7:8	5.5	301-600 (1140-2270)	83-166	0.28 (0.073)	8454 (11462)	1236 (8523)	12682 (17193)	1854 (12785)	267 (199)
	7LZ-172-5.6	7:8	5.6	301-600 (1140-2270)	88-175	0.29 (0.077)	8175 (11083)	1259 (8678)	12263 (16625)	1888 (13017)	272 (203)
	7LZ-172-6.3	7:8	6.3	301-600 (1140-2270)	83-166	0.28 (0.073)	9685 (13130)	1416 (9762)	14527 (19695)	2124 (14643)	306 (228)
	7LZ-172-6.4	7:8	6.4	301-600 (1140-2270)	88-175	0.29 (0.077)	9343 (12667)	1438 (9917)	14015 (19001)	2158 (14876)	311 (232)

DOWNHOLE MOTOR

Model Size mm	Model Number	Lobes	Stages	Flow Rate Range gpm (lpm)	Speed Range rpm	Rotation rev/gal (rev/liter)	Operation Torque ft-lb (Nm)	Operation Pressure Diff psi (kPa)	Max Torque ft-lb (Nm)	Max Pressure Diff psi (kPa)	Max Power HP (kW)
185	5LZ-185-5.6	5:6	5.6	301-600 (1140-2270)	90-179	0.3 (0.079)	8036 (10895)	1259 (8678)	12055 (16343)	1888 (13017)	274 (204)
	6LZ-185-4.8	6:7	4.8	301-600 (1140-2270)	60-120	0.2 (0.053)	10202 (13831)	1079 (7437)	15303 (20747)	1618 (11156)	233 (174)
	7LZ-185-3.2	7:8	3.2	301-600 (1140-2270)	42-84	0.14 (0.037)	9698 (13148)	719 (4959)	14547 (19722)	1079 (7439)	156 (116)
	7LZ-185-4.9	7:8	4.9	301-600 (1140-2270)	65-129	0.22 (0.057)	9652 (13086)	1101 (7593)	14478 (19629)	1652 (11390)	237 (177)
197	5LZ-197-5.6	5:6	5.6	399-901 (1510-3410)	107-242	0.27 (0.071)	8930 (12107)	1259 (8678)	13396 (18161)	1888 (13017)	412 (307)
	6LZ-197-4.8	6:7	4.8	399-901 (1510-3410)	72-164	0.18 (0.048)	11231 (15227)	1079 (7437)	16848 (22841)	1618 (11156)	351 (262)
203	5LZ-203-5.6	5:6	5.6	399-901 (1510-3410)	92-208	0.23 (0.061)	10284 (13943)	1259 (8678)	15427 (20915)	1888 (13017)	408 (304)
	6LZ-203-4.8	6:7	4.8	399-901 (1510-3410)	69-157	0.17 (0.046)	11688 (15846)	1079 (7437)	17532 (23769)	1618 (11156)	350 (261)
	7LZ-203-4.1	7:8	4.1	399-901 (1510-3410)	62-140	0.16 (0.041)	11259 (15265)	921 (6353)	16890 (22898)	1382 (9530)	300 (224)
	7LZ-203-4.2	7:8	4.2	399-901 (1510-3410)	56-126	0.14 (0.037)	12857 (17431)	944 (6509)	19286 (26147)	1416 (9764)	308 (230)
216	6LZ-216-4.8	6:7	4.8	449-1001 (1700-3790)	63-140	0.14 (0.037)	14675 (19896)	1079 (7437)	22013 (29844)	1618 (11156)	392 (292)
228	5LZ-228-4.2	5:6	4.2	600-1199 (2270-4540)	77-154	0.13 (0.034)	14077 (19085)	944 (6509)	21116 (28628)	1416 (9764)	413 (308)
	6LZ-228-4.8	6:7	4.8	600-1199 (2270-4540)	79-159	0.13 (0.035)	15445 (20939)	1079 (7437)	23167 (31409)	1618 (11156)	468 (349)
	7LZ-228-4.2	7:8	4.2	600-1199 (2270-4540)	61-123	0.1 (0.027)	17739 (24049)	944 (6509)	26608 (36074)	1416 (9764)	416 (310)
244	5LZ-244-4.2	5:6	4.2	600-1199 (2270-4540)	77-154	0.13 (0.034)	14077 (19085)	944 (6509)	21116 (28628)	1416 (9764)	413 (308)
	6LZ-244-4.8	6:7	4.8	600-1199 (2270-4540)	79-159	0.13 (0.035)	15445 (20939)	1079 (7437)	23167 (31409)	1618 (11156)	468 (349)
	7LZ-244-4.2	7:8	4.2	600-1199 (2270-4540)	61-123	0.1 (0.027)	17739 (24049)	944 (6509)	26608 (36074)	1416 (9764)	416 (310)
	7LZ-244-6.1	7:8	6.1	600-1199 (2270-4540)	75-150	0.12 (0.033)	20848 (28265)	1371 (9452)	31273 (42398)	2056 (14178)	595 (444)

PDC CUTTERS

PDC Cutters Catalog				
Model No.		**Descriptions**	**Performance and Applications**	**Available Sizes**
high Impact Resistance 3D PDC Cutters	 **T3482**	Features: 1. Leaching depth up to 800μm 2. Diamond thickness up to 3mm 3. Corner 0.4mm	**Performance:** Wear Resistance: ★★★☆ Impact Resistance: ★★★★☆ Thermal stability: ★★★ **Recommend Applications:** Bit size：12.25"~26" Bit Type：519、516、416、516B、519B Position：Nose、Shoulder	1913 1613
High Wear Resistance 3D PDC Cutters	 **T3588**	**Features:** 1. Leaching depth up to 1000μm 2. Diamond thickness up to 3mm 3. Corner 0.4mm	**Performance:** Wear Resistance: ★★★★☆ Impact Resistance: ★★★★☆ Thermal stability: ★★★☆ **Recommend Applications:** Bit size：4"~17.5" Bit Type：513B、616B、613B、716B、713B Position：Nose、Shoulder	1613 1313
High Cost-performance Heat Resistance PDC Cutters	 **T3472**	**Features:** 1. Leaching depth up to 800μm 2. Diamond thickness up to 3mm 3. Corner 0.4mm	**Performance:** Wear Resistance: ★★★☆ Impact Resistance: ★★★★ Thermal stability: ★★★☆ **Recommend Applications:** Bit size：6"~17.5" Bit Type：519、516、416 Position：Inner、Nose、Shoulder	1913 1613
Ultra-high Impact Resistance PDC Cutters	 **T3442**	**Features:** 1. Leaching depth up to 700μm 2. Diamond thickness up to 2.2mm 3. Corner 0.3mm / 0.4mm	**Performance:** Wear Resistance: ★★★ Impact Resistance: ★★★★ Thermal stability: ★★☆ **Recommend Applications:** Bit size：8.5"~26" Bit Type：519、516、416 Position：Inner、Nose、Shoulder	1913 1613

PDC CUTTERS

Model No.		Descriptions	Performance and Applications	Available Sizes
Balanced Cutters with High Impact Resistance	 **T3455**	**Features:** 1. Leaching depth up to 900μm 2. Diamond thickness up to 2.5mm 3. Corner 0.3mm / 0.4mm	Performance: Wear Resistance: ★★★☆ Impact Resistance: ★★★☆ Thermal stability: ★★★☆ Recommend Applications: Bit size：6"~17.5" Bit Type：519、516、516B、616 Position：Inner、Nose、Shoulder	1613 1313
High Wear Resistance PDC Cutters	 **T3468**	**Features:** 1. Leaching depth up to 1000μm 2. Diamond thickness up to 3.0mm 3. Corner 0.4mm	**Performance:** Wear Resistance: ★★★★ Impact Resistance: ★★★☆ Thermal stability: ★★★☆ **Recommend Applications:** Bit size：4"~17.5" Bit Type：516、516B、616、616B、716 Position：Inner、Nose、Shoulder	1913 1613
High Wear Resistance PDC Cutters	 **T3496**	**Features:** 1. Leaching depth up to 800μm 2. Diamond thickness up to 2.5mm 3. Corner0.4mm	**Performance:** Wear Resistance: ★★★☆ Impact Resistance: ★★★★ Thermal stability: ★★★☆ **Recommend Applications:** Bit size：4"~12.25" Bit Type：413、513、613、713 Position：Inner、Nose、Shoulder	1313 1308
Basic Backup PDC Cutters	 **T3396**	**Features:** 1. Leaching depth up to 700μm 2. Diamond thickness up to 2.5mm 3. Corner 0.4mm	**Performance:** Wear Resistance: ★★☆ Impact Resistance: ★★★☆ Thermal stability: ★★☆ **Recommend Applications:** Bit size：4"~26" Bit Type：519、516、416 Position：Inner、Back、Gage	1313 1308 1613
Backup Special-shaped Cutters	 **T3296**	**Features:** /	**Performance:** Wear Resistance: ★★☆ Impact Resistance: ★★★★☆ Thermal stability: ★★★ **Recommend Applications:** Bit size：/ Bit Type：/ Position：Absorber	1319 1621

PDC BEARING

PDC Thrust Bearing

PDC Thrust Bearing		
Parallelism	Flatness	Tensile Strength
≤0.02mm	≤0.01mm	≥200MPa

PDC Radial Bearing

PDC Radial Bearing		
Concentricity	Coaxiality	Roundness
≤0.05mm	≤0.05mm	≤0.05mm

PDC Combination Bearing